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**MARCH, 1931**

# ENTOMOLOGICAL NEWS

Vol. XLII No. 3

HENRY SKINNER
1861-1926

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Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

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# ENTOMOLOGICAL NEWS

VOL. XLII. MARCH, 1931 No. 3

## The Races of Diapheromera veliei (Orthoptera, Phasmidae, Heteronemiinae).

By MORGAN HEBARD, Philadelphia, Pennsylvania.

Recently in our studies of the Orthoptera of Kansas we found that *Diapheromera veliei* Walsh, occurred in its typical form over that entire State, its maximum abundance being reached in the central Great Plains. It is apparently less hardy than *Diapheromera femorata* (Say) as its known northern limits are Lake Hendricks, South Dakota, and Julesburg, Colorado, while toward the foot of the Rocky Mountains in Colorado (except probably in its southern portion) it disappears, this probably due there to the greater elevation and consequently more boreal environment of the plains.

To the south we have it typical as far as Stillwater, Oklahoma, Dalhart, Texas, and Vaughn, New Mexico, and it reaches westward over the lower divides of the Rockies as far as Albuquerque, in the latter State. Further south in Texas and New Mexico, however, we find it supplanted by a geographic race and study of the literature convinces us that that race must bear the name *Diapheromera veliei mesillana* Scudder. The following data lead to this conclusion.

DIAPHEROMERA VELIEI MESILLANA Scudder.

1901. *Diapheromera mesillana* Scudder, Psyche, IX, p. 189. [[Juv.] ♂ ; between Mesilla and Las Cruces, New Mexico.]

1907. *B*[*acunculus*] *texanus* Brunner, Insektenfam. der Phasmiden, p. 333. [♂, ♀ ; Texas.[1]]

Scudder described *mesillana* from immature males and, though difficult to associate specifically, we have sufficient such material to be satisfied that the species represented is the same as that

[1] The specimen recorded from New York was either mislabeled or represents a distinct species.

here discussed from large series of adults. In the Rio Grande valley of New Mexico this is the only species of this type present.

Brunner's description of *Bacunculus texanus* is very unsatisfactory. Probably immature material (at least in part), in which femoral spines are often lacking, led to the generic assignment, as there is no Heteronemiid found in the United States in which the adults have both median and caudal femora unarmed. Selecting Texas as type locality of *texanus,* we find that the description fits best the present insect of the forms which occur in that State and we therefore place that name as a synonym. With the wealth of material which was available in preparing "Die Insektenfamilie der Phasmiden" it is very regrettable that the work throughout is so very superficial and inaccurate.

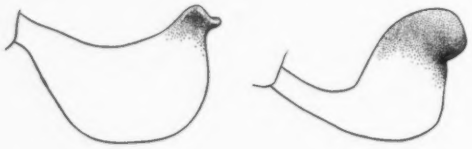


Fig. 1. *Diapheromera velii velii* Walsh. Lateral view of male poculum. Syracuse, Kansas. (Much enlarged.)
Fig. 2. *Diapheromera velii mesillana* Scudder. Lateral view of male poculum. Foothills of Ord Mountains, Brewster County, Texas. (Much enlarged.)

This race differs from typical *velii* in having the male poculum very broadly lipped, while in the female sex the femoral apices are usually strikingly suffused with black. The head averages broader, but this is apparently not constant, and the female cerci average considerably shorter. Though in all central Texan material the female femoral apices are conspicuously black, this marking is wholly absent in a female before us from Vaughn, New Mexico and in one from El Paso, Texas. It is, however, very decided in a female from Pecos, Texas and in one from Lake Valley, Sierra County, New Mexico. Absence of such marking, never found in typical *velii,* may indicate that such an individual has developed in different plants or bushes than are usually selected by the present insect.

Intergradation with *velici velici* is shown by the following material. A large series from Midland, Texas, has the male proculum as in typical *velici;* the females have the femoral apices narrowly suffused with black and the cerci very elongate, even more elongate than the average for *velici velici,* in which more individual variation in this feature is shown than in *velici mesillana.* A large series from Melena, Chaves County, New Mexico, is similar except that the female cerci are slightly shorter, though much longer than in *velici mesillana.*

The range of the present race extends from Lake Valley and Deming, New Mexico, east to Robstown and Cisco, Texas. It was reported from San Diego, Alice and Victoria, Texas, as *velici* by Caudell in 1918.[2] It is one of the most abundant and generally distributed Phasmids in central Texas, where it is particularly encountered on the low mesquite trees which there are thickly scattered over the plains. Its area of intergradation with *velici velici* apparently extends from central-northern east New Mexico eastward.

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**Notes on Tremex columba Linn. (Hymen.: Siricidae).**

In the latter part of May, near my home in the suburbs of Philadelphia, I noticed a maple tree that was dead or nearly so; on examining the trunk of the tree I found numerous larvae of *Tremex columba.* I cut out a section of the trunk about 20 inches long and 10 inches in diameter, taking it home and placing it in one of my breeding cages. The first *Tremex* emerged on June 16. From June 16 to 26, 96 males and 10 females emerged; 7 males and 22 females were obtained from June 27 to July 6, from July 7 to 16, 5 males and 1 female, 6 males and 5 females from July 17 to 31, and 6 males and 4 females during the month of August. In all 162 *Tremex* emerged from this small section cut from the trunk of the tree, —120 males and 42 females. I kept the log for some time but did not obtain any specimens after the month of August. Have wondered how many hundred *Tremex columba* there were in that tree, which was about 25 feet high and 12 inches in diameter.

PHILIP LAURENT.

[2] Ent. News, XXIX, p. 25.

## Notes on Utah Heteroptera and Homoptera.

By GEORGE F. KNOWLTON.

(Continued from page 43).

Family ANTHOCORIDAE (Am. and Serv.).

52. ANTHOCORIS ANTEVOLENS White. In leaves curled by *Prociphilus fraxinifolii* (Riley), Hyrum, June, 1929 (Knowlton).

Family MIRIDAE (Hahn).

53. TRIGONOTYLUS RUFICORNIS (Geoff.). On barley in Cache Valley, 1929 (Pack); on beets at Logan, April 20, 1929 (Knowlton); on wheat and oats, Salt Lake City, 1929 (Pack); on *Cheirinia repanda*, Snowville, June, 1930 (Knowlton).

54. ADELPHOCORIS SUPERBUS (Uhl.). Brigham City, September 12, 1925 (Knowlton); on beets at Fielding, August 28, 1925 (Knowlton); on sugar-beets, Hooper, June 29, 1929 (Knowlton); Logan, August 19, 1925 (Knowlton); Manti, July 26, 1927 (Knowlton); Provo, September 8, 1923 (Hawley); Trenton, September 7, 1923 (Knowlton).

55. IRBISIA BRACHYCERUS var. SOLANI Heid. Amalga, June, 1928 (Knowlton); Logan, July 5, 1929 (Knowlton).

56. THYRILLUS PACIFICUS (Uhl.). Howell, July 3, 1928 (Knowlton).

57. LYGUS PRATENSIS (Linn.). The tarnished plant bug is present throughout Utah, commonly attacking sugar-beets, alfalfa, potatoes, and many other crops. It often becomes extremely abundant and more or less damaging.

58. L. PRATENSIS var. HESPERUS Kngt. Frequently taken on beets and alfalfa.

59. L. PRATENSIS var. ELISUS Van D. This species is common in Utah and has been collected at Arthur, Bear River City, Cornish, Cove, Delta, Farmington, Fairfield, Garland, Hyde Park, Logan, Lynndyl, Millville, Ogden, Riverside, Tremonton, Wanship, Willard, and many other places.

60. MELANOTRICHUS BREVIROSTRIS Knight. Bear River City, September 9, 1925 (Knowlton).

61. PLAGIOGNATHUS POLITUS Uhl. On beets at Willard, July 26, 1927 (Knowlton).

62. ATOMOSCELIS MODESTUS (Van D.). On sugar-beets at Lewiston, June 5, 1929 (Knowlton); on mustard at Snowville, May 18, 1929 (Knowlton).

63. CLAMYDATUS ASSOCIATUS (Uhl.). Bear River City, September 9, 1925 (Knowlton); Brigham City, September 10, 1925 (Knowlton); Garland, September 6, 1925 (Knowlton); Lewis-

ton, August 8, 1929 (Knowlton); Trenton, September 1, 1925 (Knowlton).

64. CAMPYLOMMA VERBASCI (Meyer). On sugar-beets at Ogden, June 23, 1927 (Knowlton).

Family GERRIDAE (Am. and Serv.).

65. GERRIS REMIGIS Say. Benson, April 8, 1930 (Knowlton); Grantsville, April 3, 1930 (Knowlton); Lehi, April 4, 1930 (Knowlton); Logan Meadows, April 8, 1930 (Knowlton); Providence, June, 1930 (M. J. Janes).

66. LIMNOPORUS RUFOSCUTELLATUS Latr. Benson, April 8, 1930 (Knowlton); Logan, and Logan Meadows, April 8, 1930 (Knowlton).

Family NOTONECTIDAE (Leach).

67. NOTONECTA IRRORATA Uhl. Logan, October 1, 1922 (Knowlton).

68. N. UNDULATA Say. Logan, October 7, 1922 (Knowlton).

69. N. UNIFASCIATA Guer. Grantsville, April 12, 1930 (Knowlton); Lehi, April 4, 1930 (Knowlton); Locomotive Springs, April 10, 1930 (Knowlton); Pleasant Grove, April 4, 1930 (Knowlton).

70. N. KIRBYI Hung. Grantsville, April 12, and May 26, 1930 (Knowlton); Logan, October 1, 1922 (Knowlton); Skull Valley, April 12, 1930 (Knowlton and C. H. Smith).

Family BELOSTOMIDAE (Leach).

71. LETHOCERUS AMERICANUS (Leidy). Lehi, May 27, 1930 (Knowlton, M. J. Janes); Logan, November, 1923 (Knowlton); Ogden, August, 1929 (Knowlton); Salt Lake City, July 18, 1921 (Knowlton).

Family CORIXIDAE (Leach).

72. ARCTOCORIXA LAEVIGATA (Uhl.). American Fork, April 4, 1930 (Knowlton); Lehi, April 4, 1930 (Knowlton); Locomotive Springs, April 12, 1930 (Knowlton), Logan, April 12, 1930 (Knowlton); Pleasant Grove, April 4, 1930 (Knowlton); Salt Lake City, May 27, 1930 (Knowlton); Skull Valley, April 3, 1930 (Knowlton).

Order HOMOPTERA Latreille.

Family CICADIDAE (Latreille).

73. DICEROPROCTA APACHE Davis. St. George, 1919 (R. A. Morris).

74. CACAMA VALVATA (Uhl.). St. George, June 18, 1921 (D. McFarland).

75. OKANAGANA UTAHENSIS Davis. Bountiful, July 12, 1929 (Pack and M. J. Janes); Cooperton, July 3, 1929 (Knowlton); Corinne, June 22, 1929 (Knowlton); Fort Duchesne, June 25, 1926 (W. Sorenson); Logan, July 31, 1923 (Knowlton); Mill Creek Canyon, June 22, 1926 (Knowlton); Rattle Snake Pass, July 11, 1929 (Knowlton); Salt Lake City, July 3, 1929 (Knowlton); Skull Valley, June 26, 1929 (Knowlton and W. Keller); Snowville, July 11, 1929 (Knowlton); Stansbury Island, June 13, 1913 (Pack, Hagan, Titus).

76. O. SCHAEFFERI Davis. Beaver, July 6, 1927 (Knowlton) and June 25, 1927 (Pack).

77. O. VANDUZEEI Distant. Bountiful, June 22, 1929 (Pack and M. J. Janes).

78. O. GIBBERA Davis. Corinne, June 22, 1929 (Knowlton and M. F. Bowen); Delle, July 24, 1929 (Knowlton); "The Delle", July 24, 1929 (Knowlton); Hardup, June 9, 1930 (Knowlton); Iosepa, June 14, 1929 (Knowlton); Timpie, June 15, 1929 (Knowlton and Keller); Skull Valley, June 12, 1929 (Knowlton).

79. O. BELLA Davis. Blue Creek, June 17, 1930 (Knowlton and M. J. Janes); Brigham Canyon, June 17, 1930 (Knowlton and Janes); Cache Junction, June 20, 1909 (C. P. Smith) and June 23, 1912 (Hagan); Garland, June 18, 1904; Logan, July 14, 1906, July 2, 1909 (Stewart); Logan Canyon, June 26, 1920 (G. E. King); Sardine Canyon, June 20, 1930 (Knowlton and M. J. Janes); Stansbury Island, June 13, 1913 (Pack, Hagan, Titus).

80. O. STRIATIPES (Hald.). Bonneville, July 16, 1909 (Titus); Bountiful, July 12, 1929 (Pack); Fairview, July 10, 1929 (Knowlton); Garland, July 13, 1929 (Knowlton and Bowen); Lehi, July 19, 1909 (Titus); Logan; Point of Mountain, south of Salt Lake City, July 2, 1909 (Titus); Woods Cross, July 17, 1909 (Titus).

81. O. FRATERCULA Davis. Snowville, June 20, 1929 (Knowlton and Bowen).

82. PLATYPEDIA PUTNAMI (Uhl.). Cache Junction, June 3, 1912 (Hagan); Logan Dry Canyon, June 29, 1912.

83. P. LUTEA Davis. Logan Dry Canyon, June 6, 1924 (Knowlton); Provo, June 1, 1930 (Knowlton); Salt Lake City, July 2, 1912.

84. P. MOHAVENSIS Davis. Beaver, June 25, 1927 (Knowlton), June, 1928 (Pack).

Family MEMBRACIDAE (Germar).

85. CERESA BUBALUS (Fabr.). Garland, June, 1929 (Knowlton).

86. C. BASALIS Walk. Fort Duchesne, August 11, 1927 (C. J. Sorenson).

87. STICTOCEPHALA PACIFICA Van D. On sugar-beets at Grantsville, August 13, 1927 (Knowlton).

88. S. FESTINA (Say.). Hawbush, September 14, 1929 (C. J. Sorenson); Lake Point, September 11, 1929 (Knowlton); McCormick, September 11, 1929 (Sorenson); Richmond, September 9, 1926 (Knowlton).

89. HELIRIA RUBIDELLA Ball. On apple, Logan, July, 1924 (Knowlton).

90. TELAMONA PYRAMIDATA Uhler. Newton, July 8, 1929 (Pack); Provo, August 7, 1929 (Pack).

91. PUBLILIA MODESTA Uhl. Brigham City, August 10, 1927 (Knowlton); La Point, September 25, 1929 (C. J. Sorenson); on sage at Logan, August 21, 1929 (Knowlton); on beets at Provo, July 5, 1927 (Knowlton); Tremonton, April 29, 1927 (Knowlton).

92. LEIOSCYTA FERRUGINIPENNIS var. TESTACEA Van Duzee. On Russian thistle, Center, August 17, 1929 (Knowlton); on *Atriplex*, Clover, April 17, 1929 (Knowlton); Elberta, August 7, 1929 (Knowlton); Goshen, July 27, 1929 (Knowlton); Lucin, August 12, 1929 (Knowlton and Bowen); Ophir, August 17, 1929 (Knowlton).

Family CICADELLIDAE (Latreille).

93. ONCOPSIS COGNATUS (Van D.). Salt Lake City, June 22, 1926 (Knowlton).

94. BYTHOSCOPUS FRANCISCANUS (Baker). Brigham City, September 2, 1927 (Knowlton).

95. HELOCHARA COMMUNIS Fitch. Common on grass, Grantsville, April 27, 1930 (Knowlton); Hyde Park, April 27, 1929 (Knowlton); Logan, June 3, 1922 (Knowlton); Magna, June 27, 1930 (Knowlton); Ogden, April 22, 1929 (Knowlton); Sandy, September 20, 1930 (Knowlton).

96. XEROPHLOEA VIRIDIS (Fabr.). Amalga, August 31, 1927 (Knowlton); mouth of Logan Canyon, October 4, 1929 (Knowlton); on beets at Trenton, September 20, 1929 (Knowlton).

97. EUTETTIX TENELLUS (Baker). Abundant in Utah during 1930, causing serious damage to sugar-beets and tomatoes in many parts of the state.

98. PHLEPSIUS OVATUS Van D. Corinne, July 21, 1929 (Knowlton); Garland, July 13, 1929 (Knowlton and Bowen); Willard, April 17, 1929 (Knowlton).

99. P. IRRORATUS (Say). Mouth of Logan Canyon, October 4, 1929 (Knowlton).

100. CICADULA SEXNOTATA (Fall.). Mouth of Logan Canyon, October 4, 1929 (Knowlton); Morgan, September 14, 1925 (Knowlton).

101. DIKRANEURA CARNEOLA (Stal). Lewiston, July 2, 1927 (Knowlton); numerous on *Gutierrezia*, mouth of Logan Canyon, October 4, 1929 (Knowlton).

102. EMPOASCA ASPERSA G. and B. Austin, June 25, 1926 (Knowlton).

103. E. FLAVESCENS (Fabr.). Hyrum, April 17, 1930 (Knowlton); Logan, April 20, 1929 (Knowlton).

104. TYPHLOCYBA POMARIA McAtee. On apple at Tremonton, September 7, 1923 (Hawley).

105. ERYTHRONEURA COMES (Say). On Virginia creeper at Bountiful, 1929 (Pack); Brigham, 1929 (Pack); on currant and grape, Clearfield, 1929 (Pack); damaging Virginia creeper at Salt Lake City, July, 1930 (Knowlton).

Family FULGORIDAE (Latreille).

106. ORMENIS SAUCIA Van D. Angus, July 9, 1927 (Knowlton).

107. LIBURNIA GILLETTEI Van D. Ogden, April 17, 1929 (Knowlton).

Family CHERMIDAE (Fallen).

108. APHALARA CALTHAE (Linn.). Fairfield, June 19, 1913 (Titus); Mills, September 19, 1930 (Knowlton).

109. PARATRIOZA COCKERELLI (Sulc.). Damaging early potatoes in several parts of northern Utah, spring of 1930.

110. EUPHALERUS VERMICULOSUS Crawf. Logan Canyon, August 21, 1925 (Knowlton); on *Artemisia*, Spring Canyon, August 28, 1925 (Knowlton).

111. ARYTAINA RIBESIAE (Crawf.). Lehi, 1929 (Pack); Salt Lake City, 1929 (Pack).

## New Species of West Indian Agromyzidae (Diptera).

S. W. FROST, The Pennsylvania State College.

Two new species of Agromyza are described and notes given on other species of Agromyza recently taken in the West Indies.

**Agromyza commelinae** n. sp.

A medium sized species, 1 to 1.5 mm. Male: front, face, cheeks, antennae, proboscis and palpi entirely yellow; scutellum, pleurae and legs largely yellow; mesonotum with yellow before the scutellum. Front including orbits slightly wider than either eye, sides nearly parallel; frontal stripe and orbits concolorous,

not separable; four pairs of fronto-orbitals equally spaced in rows, upper three pairs of equal size the lower pair smaller; orbital hair sparse but conspicuous, upturned; front slightly produced above antennae; cheeks nearly one-half eye height; one weak pair of oral vibrissae, distinctly stronger than accompanying setae along lower margin of cheeks; yellow of cheeks continuing back of eye and joining yellow of orbits; ocellar triangle reddish brown separated from brown of occiput by a broad yellow line, with several minute setae between the ocellar bristles; antennae entirely yellow, bristle on second segment short, black, a fringe of minute black bristles along the distal outer edge of second antennal segment, third segment (male) greatly enlarged, rounded on outer edge, sparsely covered with short white pile; arista scarcely one-and-one-fourth times the length of the third antennal segment, slender, brown in color and microscopically pubescent, basal fourth only moderately swollen and bare.

Mesonotum marked in center with subshining brown, sides of mesonotum yellow, yellow continuing broadly across anterior margin leaving a brown area in the center about one-third the width of the mesonotum; anterior callosities entirely yellow without dark spots; yellow continuing entirely across posterior margin of mesonotum, the posterior edge of the discal brown color divided by short yellow points into five short lobes, the center the broadest and reaching nearly to the scutellum; sides of pleurae almost entirely yellow, a subshining brown triangle on lower part of sterno-pleurae and a similar spot on hypopleurae; scutellum pale yellow in the middle, darkened only on sides at the base; four pairs of dorso-central bristles, the anterior two pairs smaller, less than one-half the length of the posterior pairs; about six rows of small acrostichals scarcely reaching to the third pair of dorso-centrals; three rows of small setae outside the dorso-centrals; one presutural arising from yellow color of mesonotum, two weak pairs of intraalars, one mesopleural and one sternopleural.

Legs entirely yellow, setae black, tibiae and tarsi only slightly darker.

Abdomen largely yellow, first segment yellow on basal three-fourths, second and third segments subshining brown with yellow incisures, fourth and fifth with central brown spots and yellow on the sides, male genitalia centrally yellow, laterally shining brown.

Wings rather short, auxiliary vein indistinct but ending separately in costa close to vein one, costa reaching to vein four, anterior cross-vein distinctly before middle of discal cell and about one-third from base of discal cell, posterior cross vein

one-and-one-half times its length from the anterior cross-vein, veins two and three distinctly diverging, veins three and four subparallel, second, third and fourth sections of costa as 2½-1-1, last section of fifth vein one-and-three-quarters times the length of the penultimate section, vein five nearly straight or bending gently at the tip into the wing margin, sixth vein reaching three-quarters' way to the wing margin. Squamae gray, fringe dusky. Halteres yellow.

Female similar in structure and color to male but third antennal segment in female normal in size and ovipositor shining black.

*Holotype:* ♂ February 10, 1915, St. Vincent, BRITISH WEST INDIES (F. Watts) reared as a leaf-miner on *Commelina virginica*. Five *paratypes* all reared as leaf-miners on *Commelina virginica* by F. Watts as follows; 2 ♂ and 3 ♀ Feb. 10, 1915, St. Vincent, B. W. I. There are also two other paratypes 1 ♂ from CUBA reared from *Commelina nudiflora* and 1 ♀ St. Vincent, B. W. I. (S. C. Harland).

This species runs close to *angulicornis* Mall. but has more than two rows of acrostichals. It also runs close to *melampyga* Loew, but the markings on the mesonotum are different, the anterior cross-vein is distinctly before the middle of the discal cell and the third antennal segment in the male is greatly enlarged.

**Agromyza ipomaeae** n. sp.

A medium sized species, 2 mm.

♂ : Front, face, cheeks and proboscis yellow; antennae and palpi black; cheeks one-quarter eye-height; yellow of cheeks extending only slightly behind the eye; a single pair of oral vibrissae, distinctly stronger than accompanying setae along the lower margin of the cheeks; ocellar triangle shining black only between ocelli, sides yellow, black of ocellar triangle continuous with black of occiput, several minute hairs on ocellar triangle between ocelli; orbits darkened only very narrowly on upper outer angles; four fronto-orbital bristles; orbital hairs small and sparse; basal segments of antennae dark brown, bristle on second segment weak, smaller than lower fronto-orbital bristle, third segment black, medium sized, rounded at tip, sparsely covered with short white pile, arista three times the length of the third antennal segment, pubescence microscopic but distinct.

Mesonotum and scutellum shining black, pleurae largely

shining black, sutures narrowly yellow, base of wing yellow, yellow extending on anterior humeral callosities but not above wing base; humeral bristle arising from edge of yellow color, post-humeral bristle arising from a narrow black spot on pleurae, presutural bristles not strong, arising from edge of black on mesonotum, one propleural and one sternopleural bristle; two strong pairs of dorso-central bristles of about equal length, a weaker pair preceding these; seven or eight rows of acrostichals reaching to posterior pair of dorso-centrals; three rows of small setae outside dorso-centrals.

Legs subshining black, anterior knees yellow, mid tibiae with two distinct posterior mid-tibial bristles.

Wings hyaline, auxiliary vein distinct from vein one, ending independently in the costa, costa reaching to the fourth vein, anterior cross-vein near the middle of the discal cell, posterior cross-vein its length from the anterior cross-vein, last section of fifth vein about two times the length of the penultimate section, sixth vein reaching almost to the wing margin, squamae gray, edge and fringe dark brown. Halteres yellow.

*Holotype:* ♂ June 20, 1930, Rio Piedras, PORTO RICO (M. D. Leonard) reared as a leaf-miner on *Ipomaea batatas.* 8 *paratypes;* 1 ♂ June 20, 1930, 3 ♂ and 4 ♀ June 22, 1930, also reared from *Ipomaea batatis* Rio Piedras, P. R. (M. D. Leonard).

This species runs close to the European *artemisiae* Kaltb., but *artemisiae* Kaltb. has abundant oral hairs in addition to the orbital bristles. It also runs close to *jucunda* V.d.W. It differs chiefly in having the orbits entirely yellow and the squamae gray in color. In *jucunda* V.d.W. the anterior cross-vein is distinctly beyond the center of the discal cell. This is a variable character and cannot always be relied upon. The writer has *jucunda* V.d.W. reared as a miner from *Verbena, Ambrosia* and *Helianthus.* Most of the specimens show the anterior cross-vein beyond the center of the discal cell but one shows it near the center of the cell and one specimen shows no posterior cross-vein on one side.

The following species have been identified from material in the United States National Museum.

AGROMYZA INAEQUALIS Mall., 9 ♂ and 4 ♀ Oct. 15 St. Vincent, BRITISH WEST INDIES (F. Watts) miner on Lima beans.

AGROMYZA PLUMISETA Mall., 1 ♂ Aug. 7 St. Domingo, WEST INDIES (A. Busck), 1 ♂ May 31, 1917, St. Thomas, W. I. (H. Morrison).

AGROMYZA PARVICORNIS Loew, 1 ♂ and 1 injured specimen Oct. 21, 1912, Rio Piedras, PORTO RICO (T. H. Jones).

AGROMYZA MACULOSA Mall. 2 ♂ and 1 ♀ July 16, 1922, Rio Piedras, PORTO RICO, bred from Asters (F. Stein).

**The Status of Leng's Classification of the Coleoptera.**

Dr. Clarence E. Mickel, in the September, 1930, issue of the Annals of the Entomological Society of America (XXIII, p. 511), states that "the classification of this order [Coleoptera] used by the latter [Leng] in his catalogue of North American Coleoptera is the one now met with in current literature." This is cited as partial evidence for the assertion: "The systems of classification in use at the present time for at least three large orders of insects have originated in this country [North America]." As applied to the Coleoptera I do not believe that the literature substantiates such a conclusion.

In the first place, Mr. Leng's system is largely based on that of Ganglbauer (1903) and Kolbe (1908). So far as it departs from these systems, it is characterized by the following among other peculiarities: recognition of Omophronidae, Corynetidae, and Trogidae as distinct families; division of the Adephaga into Caraboidea and Gyrinoidea; removal of the Cupesidae, Rhysodidae, and Paussidae from the Adephaga; division of the Staphyliniformia into Silphoidea and Staphylinoidea; the abolition of the Heteromera (following Sharp and Muir) and its distribution among the Serricornia and Clavicornia as Mordelloidea and Tenebrionoidea.

Outside of North America I am unable to cite a single entomological work that has adopted the peculiarities of Mr. Leng's system. Works that have appeared since 1920 that do not follow him include: Zoological Record, Imm's General Textbook of Entomology, Tillyard's Insects of Australia and New Zealand, Handlirsch in Schröder's Handbuch der Entomologie, Scheerpeltz and Winkler in Brohmer's Tierwelt Mitteleuropas, Porta's Fauna Coleopterorum Italica, and Winkler's Catalogus Coleopterorum regionis palaearcticae. So far as the classification of the Coleoptera now in use throughout the world is to be ascribed to any one man, that man would seem to be Ganglbauer.

MELVILLE H. HATCH, University of Washington, Seattle, Washington.

## A New Belomicrus from the West (Hymen.: Sphecidae).

By V. S. L. PATE, Cornell University, Ithaca, N. Y.

In a collection of Oxybeline wasps that Dr. Francis X. Williams of the Hawaiian Sugar Planters' Association sent recently for determination there is a new species of *Belomicrus,* a description of which is appended below inasmuch as Dr. Williams desires to publish some notes on its life history. Hitherto nothing has been known concerning the biology of any *Belomicrus* save a few scattered flower records. It gives me great pleasure to dedicate this interesting little species to its prospective Boswell as well as its habitat.

**Belomicrus franciscus** sp. nov.

♂. 5 mm. long. Black. Mandibles light yellow, apices piceous. Margin of clypeal bevel above, scape except a brown spot behind, pedicel and flagellum beneath, pronotum to and including the tubercles, axillary sclerite, a macula on each side of the scutellum, postscutellum, fore femora apically and beneath, middle and hind femora apically, all tibiae externally and metatarsi, light yellow; remainder of tarsi fulvous. Tegulae fuliginous subhyaline; squamae and mucro apically whitish subhyaline. Abdomen ferruginous, each tergite with a yellow fascia preapically, that of the first tergite widest; first two sternites deeply infuscated, brownish black discally. Wings clear hyaline, veins light brown. Face with appressed short silky pubescence, remainder of body silvery puberulent.

*Head* shining, finely but distinctly punctured; mandibles medially within with a distinct inwardly directed tooth; clypeus discally tuberculate, widely emarginate and with a nitidous bevel apically, the apical margin parallel with a flat ridge which is obtusely angulate at the tubercle and which appears superficially to be the apical margin of the clypeus; front with two elongate, glabrous, nitidous impressions to accommodate the scapes when laid back and an impressed line from the anterior ocellus to the clypeal tubercle; postocellar line about three times the ocell-ocular; vertex behind the compound eyes rounded; temporal carinae absent.

*Thorax* shining, with puncturation similar to head; pronotum not carinate, rounded anteriorly and laterally, declivitous anteriorly; prepectus rounded anteriorly; squamae enclosing the postscutellum and almost contiguous behind, with the posterior emargination a shallow V-shaped notch, posterior apices

rounded; mucro short, straight, apex obtuse; propodeum finely granulate throughout and obscurely and indistinctly striate dorsally and laterally, median fovea above and lateral carinae below erased.

*Abdomen* shining, finely punctate, constricted somewhat between the segments, second sternite with a suggestion of a raised arcuate ridge preapically on each side.

♀. 4.75 mm. long. Similar to the male except that the clypeus is retuse apically and horizontally striate on the bevel below the tubercle. Psammophore with the mandibular, temporal, humeral and femoral ammochaetae present and well developed.

*Holotype.*—♂, Lone Mountain, San Francisco, CALIFORNIA, 1930 (F. X. Williams) [Cornell University, Type No. 924.1]. *Allotype.*—♀, same data as holotype. *Paratypes.*—5 ♂ ♂, same data as holotype.

This species belongs to the *forbesi*-group. Full details concerning its relationship to allied species, ultimate location of the types, as well as figures of the species will be published at a later date in a forthcoming monograph of the Oxybeline wasps of the New World.

## A New Milliped of the Genus Fontaria from Mississippi (Chilognatha: Xystodesmidae).

By RALPH V. CHAMBERLIN, University of Utah.

Among material recently sent to me for identification from the U. S. Bureau of Entomology was a single adult male of the new species of Fontaria described below. It was collected by Mr. K. L. Cockerham at Biloxi, Miss. The type is in the author's collection.

**Fontaria lamellidens,** sp. nov.

The dorsum and head light horn brown, with the carinae paler. Antennae light brown. Venter and legs dilute yellowish.

Body of the typical general shape, being parallel-sided over the middle portion and moderately narrowed at the ends. The lateral carinae are well developed; posterior margins of first few running slightly forwards, while the succeeding few are transverse and the others directed in increasing degree caudad of transverse; the caudo-ectal angle is in all but the first three

carinae produced caudad in subdentiform manner, with apex rounded; the last four pairs of carinae produced more strongly caudad as usual, their apices all rounded. Carinae all moderately depressed; lateral borders elevated, moderately indented opposite pores on porigerous segments; anterior margin more narrowly elevated.

Head shining, smooth or nearly so. Vertigial sulcus distinctly impressed, ending abruptly above the level of insertion of antennae, but followed by a short median longitudinal impressed line at level of antennae. Vertigial foveolae 2 2, each bearing a long seta. Labral border set off by a fine, broken, impressed line, paler in color than rest of head, conspicuously setose, the setae at lateral ends of the area arranged in denser patches. In the male the coxae of the second legs bear the usual special processes which are short and cylindrical. The anterior sternites in the male are without obvious processes.

The gonopods of the male have the basal portion of the telopodite strongly pilose over the meso-ventral surface, the long hairs directed mesad, while the principal blade is more sparsely provided with much shorter hairs along mesal side, these present from base distad beyond the middle of blade. The principal blade is moderately curved, each crossing the other distally; at the distal end the blade is divided parallel to the flat surface into two lamellar processes; the ventral one of these lamellae moderately curved mesad, the dorsal one with inner edge straight, the other curved, its distal end more acute than that of the ventral lamella; the lamellae of equal length, parallel with each other, and nearly contiguous. Inner prong of the telopodite glabrous, nearly straight, narrowing to a slenderly acute tip which is slightly curved outward, reaching to near the level of furcation of the principal blade.

Length of holotype (a male), about 33 mm.; maximum width across carinae, 8 mm.

Locality.—Mississippi: Biloxi. K. L. Cockerham, collector.

Distinguished from all other species of the genus in the lamellate form of the distal process of the gonopods as above described.

## Change of Address.

I am now with the U. S. Bureau of Entomology and located at the U. S. National Museum. My home address is 2222 Que Street, N. W., Washington, D. C.—H. G. Barber.

## The Naming of Individual Variants in Lepidoptera.

By G. Talbot, The Hill Museum, Witley, Surrey, England.

The article on this subject by Mr. A. B. Klots (Ent. News xli, pp. 298, 324) places before American Lepidopterists an opinion held by many European workers. The present writer has twice referred to this subject. Firstly re the question of naming teratological specimens (Ent. Zeit. 42, p. 201, 1929); secondly re the naming of variations in the markings of certain Coleoptera (Ent. Record 42, p. 70, 1930).

The article by Klots appears to be prompted not only by the custom of giving names to insignificant variants, but also by the attempt made by Gunder to place this method on a scientific basis. We agree with Klots that Gunder has failed in his attempt to classify variants.

Perhaps the reply of those who think to continue this custom of naming all variants, would be that it does not matter what kind of variation it is, but as a difference of a kind can be discerned, it should be duly christened to distinguish it from a form which closely resembles it. Such a view could be held only by those who have either not seen a large collection of a variable species, or who have not seriously considered the question. Let us take, for example, a series of specimens showing the development of a band on the wing, from a wing without any trace of a band to one in which a well-defined band occurs. If we call the specimen with a half-developed band a "Transition Form", this term must be used for all the other specimens in the series because we cannot define any line of demarcation. The use of the term "Transition Form" is superfluous; it must necessarily include many pure aberrations which may never be repeated in the history of the species.

Before giving a name to some variant, let us pause and ask whether it deserves a name.

A definitely distinguishable variant can receive a name, but one may often be at a loss to know whether to call it a "Form" or an "Aberration". In the absence of breeding one has to judge by experience or by the kind of material. If more than one specimen of the variant is known from the same locality, it may be called a "Form" as presumably it is recurrent. Many

such Forms (excluding dimorphs and seasonal) are called Races by some European authors, as distinguished from subspecies. They are not, however, true Races, because the typical form occurs with them, and predominates.

Methods of classification adopted for one group of animals must hold good for all other groups. There cannot be one system for Lepidoptera and another for Mammals.

Let us examine the Human Species from the Lepidopterist's point of view. Each individual is different inasmuch as the difference is apparent to every other individual, and each has a name. This is so far in accordance with the method of naming all differences, but in Man it is done for his own convenience, and represents personality. The homologue in Lepidoptera would be those slight variations which may be detected only by means of a powerful microscope.

A certain population of men differs from another population in several ways, especially in its language. Such is a tribe or nation, represented in Lepidoptera by "Forms".

Several populations of Man agree in certain structural characters, and we have the Chinese and Polynesian Races for example. These are surely represented in Lepidoptera by subspecies or geographical races.

Lastly we have human aberrations, some pathological, others characterised by definite personalities and proved genius. It has not been thought useful to give a varietal name to a congenital idiot, nor to a mathematical genius.

The growing lists of names for individual variants in Lepidoptera is embarrassing and inconvenient. It is largely the work of amateur zoologists whose knowledge is frequently restricted to a section of Lepidoptera.

If one has a good series of variants in a race of a variable spēcies to which many names have been given, one cannot be certain, without comparison with the type specimen, if any one of these variants is to be called by a certain name already published. In many cases no specimen identical with a Type would be found, and every individual would require a name. As no-one could remember what the majority of such names represented, and it would be found necessary to read carefully a key-

list of all the described variants in the species, the name loses its presumed value and becomes superfluous to any study.

The question now arises as to whether we can accept the view expressed by Klots that "Scientific names should not be applied to any concept lower than subspecies".

In the category below subspecies, we have, perhaps, four Forms (including specimens comprised under Gunder's "Transition Form"). Sometimes a recognizable Form will be found to occur elsewhere as a subspecies. It should obviously bear a name. Other Forms are mimetic examples, and should bear a name to record their existence, and to enable the phenomena with which they are associated, to be dealt with easily. One never knows when any particular Form will bear a new significance in connection with the species-study, or with some problem arising out of the study of other species. Furthermore, the rate of evolutionary change going on amongst insects and other of the lower groups of organisms, may be sufficiently great for some alteration in status to occur during the time which may be available to Man for his studies.

For these reasons we believe that concepts below the rank of subspecies may bear scientific names.

A name should be given to any specimen or specimens which show definite differentiating characters, providing these characters are not of a teratological or pathological type.

If the requisite data be not available, the classification of the new Form must remain *sub judice*. It may prove to be a race, a local form, a seasonal or sexual form, and it may be one among others remaining to be discovered, belonging to any one of the forms mentioned.

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### Ceratopogonine Midges on Wings of Odonata. (Dipt.: Chironomidae).

Dr. J. Bequaert (The African Republic of Liberia and the Belgian Congo, Vol. II, p. 846, 1930) records the finding of female midges at Gbanga, Liberia, September, 1926, fixed by means of the proboscis to the underside of the wings of dragonflies, *Trithemis arteriosa* (Burm.) and *Orthetrum microstigma* Ris. According to Mr. F. W. Edwards, of the British Museum, the midge is an undescribed species, probably of a new genus. The only similar record is by Jacobson and de Meijere (Tijdschr. v. Ent., lxvi: 135, 137, 1923).

**Bites by Aphis Lion (Neur.: Chrysopidae).**

Dr. L. O. Howard has called our attention to the following letter on this subject in the *Journal of the American Medical Association* for December 13, 1930, page 1855, which we reprint here, as the original may not come to the attention of all entomologists.

*To the Editor.*—A prolonged drought, as a disturbance, digs deep into the daily web of life. The aphis lion (Chrysopidae) usually finds aphides enough and to spare; but not this dry year. As a result, he turned to anything bearing blood and I have known of six or more bites this summer. About the first week in August, sitting under a large white oak tree in my yard, I felt a sharp bite on the wrist and looked to find, to me, a new form of insect sinking his "beak" into the flexor aspect of my wrist so vigorously and with such manifest enjoyment that I became more interested than angry. He was a yellowish, spotted, canoe-shaped larva of some kind about 5 or 6 mm. long, with a pair of long curved, almost parallel mandibles, now covered with blood, with which he was tearing the flesh. Some movement of mine made him move about an inch away, where he started again, nothing daunted. The pain was more like a bite than a sting, but the after results indicated some new and novel toxin. Interested, I let him suck his fill at the second bite, and then I bottled him for identification—with the result mentioned. An hour later there was an intense burning pain, worse than any mosquito bite, with an areola an inch or more in diameter around the first bite and almost none around the second, showing seemingly a mosquito-like initial injection of some anti-clotting globulin. The next day the two were equally inflamed and almost purpuric in tint. It was not until the fourth day that the inflammation began to decline. Two friends who saw the "bug" had experiences almost as bad, and one or two others who visited me had "strange bites" of untoward severity. Has this experience been found elsewhere? I am anxious to know.

P. B. BARRINGER, M.D., University, Va.

[Dr. Howard in the first edition of his *Insect Book*, page 223, and Dr. Werner Marchand (ENT NEWS, XXXIII, p. 120, April, 1922) have described similar cases, but in neither instance do the effects of the bites appear to have been as prolonged as in those narrated by Dr. Barringer.—EDITOR, ENT. NEWS.]

# Entomological Literature

COMPILED BY LAURA S. MACKEY UNDER THE SUPERVISION OF E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers within brackets [ ] refer to the journals, as numbered in the list of Periodicals and Serials published in the January and June numbers (or which may be secured from the publisher of Entomological News for 10c), in which the paper appeared. The number of, or annual volume, and in some cases the part, heft, &c. the latter within ( ) follows; then the pagination follows the colon :

All continued papers, with few exceptions, are recorded only at their first installments.

*Papers containing new forms or names have an * preceding the author's name.

(S) Papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

☞*Note the change in the method of citing the bibliographical references, as explained above.*

**Papers published in the Entomological News are not listed.**

**GENERAL.—Anon.**—Entomology and the British Empire. [31] 127: 61-62. **Bryson, H. R.**—The interchange of soil and subsoil by burrowing insects. [103] 4: 17-24. **Clark, A. H.**—Nature narratives. Vol. 1. 135 pp. Baltimore, 1929. **Cockayne, E. A.**—Insect teratology. [36] 78: 209-226, ill. **David, K.**—Zum apterismus bei insekten. [45] 25: 168. **Eltringham & Britten.**—Histological and illustrative methods for entomologists. 139 pp., ill. **Hayward, K. J.**—In far Argentina. [21] 43: 8-11. **Lameeré, A.**—[Sur la philosophie des sociétés d'Insectes]. [Mem. Soc. Ent. Belgique] 23: xvii-xxxiii. **Pilsbry, H. A.**—The status of Bulla. [The Nautilus] 44: 98. **Poche, F.**—Dr. Stiles' "American referendum" on three propositions in nomenclature. [Verh. Zool. Bot. Gesel. Wien] 79: 273-283. **Poulton, E. B.**—An appeal for uniformity of usage in nomenclature. [Pro. Ent. Soc. London] 5: 25-26. **Ruediger, E.**—Insekten als symbole. [Ent. Nachrich.] 4-94-97.

**ANATOMY, PHYSIOLOGY, ETC.—André, M.**—L'appareil respiratoire du Thrombicula autumnalis (Acarien: Fam. Thrombidiidae). [Assoc. Franc Avanc. Sci.] 1929: 433-434, ill. **Bodenheimer, F. S.**—Ueber thermotaktisches verhalten, körpertemparatur und aktivitätsminimum bei insekten. [34] 93: 59-61. **Brindley, M. D. H.**—On the metasternal scent-glands of certain heteroptera. [36] 78:

199-207, ill. **Crampton, G. C.**—A comparison of the more important structural details of the larva of the archaic tanyderid dipteron Protoplasa fitchii with other holometabola from the standpoint of phylogeny. [19] 25: 239-258, ill. **Gunn, D. L.**—The function of the air sacs of insects. [31] 127: 58-59. **Jancke, O.**—Zur kenntnis der männlichen kaudalregion der Anopluren. [Zeit. Parasit., Berlin] 3: 1-7, ill. **Lever, R. J. A. W.**—A new endoskeletal organ in the hind legs of the Halticinae. [34] 92: 287-288, ill. **Marcu, O.**—Beitrag zur kenntnis der stridulationsorgane bei Ipiden. [34] 92: 238-242, ill. **Marcu, O.**—Beitrag zur kenntnis der tracheen der insekten. [34] 93: 61-63, ill.

**ARACHNIDA AND MYRIOPODA.—*Beier, M.**—Zur kenntnis der Chthoniiden (Pseudoskorpione). [34] 93: 49-56. (S). **Cook, H. J.**—The finding of large centipedes in Wyoming and western Nebraska. [68] 73: 126. ***McGregor, E. A.**—A new spinning mite attacking Asparagus plumosus in Florida. [10] 32: 161-163, ill. **Petrunkevitch, A.**—The spiders of Porto Rico. Part III. [Trans. Connecticut Acad. Arts & Sci.] 31: 188 pp., ill. ***Viets, K.**—Ueber nordamerikanische Koenikea-arten (Hydracarina). [34] 92: 266-272, ill. ***Viets, K.**—Ueber einige Gattungen und arten der Axonopsae, Mideopsae und Arrhenurae (Hydracarina). [34] 93: 33-48, ill.

**THE SMALLER ORDERS OF INSECTS.—*Carpenter, F. M.**—The lower permian insects of Kansas. Part 2. The orders Paleodictyoptera, Protodonata, and Odonata. [16] 21: 97-139, ill.

**ORTHOPTERA.—*Hebard, M.**—The orthoptera of Alberta. [Pro. Acad. Nat. Sci. Phila.] 82: 377-403.

**HEMIPTERA.—*Bueker, E. D.**—Two new mealy-bugs (Coccidae) in nests of ants (Lasius). [40] 453: 3 pp., ill. **Drake, C. J.**—Notes on American Tingitidae. [19] 25: 268-272. ***Green, E. E.**—Notes on some Coccidae collected by Dr. Julius Melzer, at Sao Paulo, Brazil (Rhynch.). [60] 91: 214-219, ill. ***Johnston, H. G.**—Four new species of Miridae from Texas. [19] 25: 295-300. **Klyver, F. D.**—Euphyllura arctostaphyli and Euphyllura neveipennis (Chermidae). A difference in interpretation. [10] 32: 153-159, ill. ***Laing, F.**—Description of a new species of Aleyrodidae. (Rhynch.). (S). [60] 91: 219-221, ill.

**LEPIDOPTERA.—Bryk, F.**—Lepidopterorum Catalogus. Pars 39. Papilionidae III (Papilio). 513-676. **Bryk,**

**F.**—Lepidopterorum Catalogus. Pars 42. Dioptidae. 3-65. **Clark, A. H.**—Some observations on butterfly migrations. [76] 1931: 150-155. **Cockerell, T. D. A.**—Notes on Eurymus eurytheme autumnalis. [19] 25: 300. ***Hering, M.**—Neue und alte Lepidopteren. (S). [Mitt. Zool. Mus., Berlin] 16: 513-522, ill. **Macrolepidoptera** of the World. Fauna Americana Part 213. [This part completes the American Saturnidae by Draudt and begins the Uraniidae by Gaede.] **Martin & Ingham.**—Diurnal lepidoptera of Huntington Lake region, Fresno County, California. [Bull. So. Calif. Acad. Sci.] 29: 115-134. ***Meyrick, E.**—Exotic Microlepidoptera. (S). 4: 32 pp. **Poulton, E. B.**—Insects collected by Dr. J. A. Douglas, in a hitherto unexplored area of E. Peru. Intense pain caused by the bite and sting of a winged female Ponerine ant. The snake-like appearance of the S. American sphingid larva of Pholus labrusca, enhanced by the modified caudal horn. [Pro. Ent. Soc. London] 5: 19-20, 22-24. ***Róber, J.**—Neue exotische falter. [18] 24: 389-393, ill. **Stichel, H.**—Lepidopterorum Catalogus. Pars 41. Riodinidae III: Riodininae II. 545-720. ***Wurster, C. W.**—A melanic form of Telea polyphemus. [19] 25: 273-274, ill.

**DIPTERA.—*Alexander, C. P.**—New or insufficiently-known crane-flies from the nearctic region (Tipulidae). Part III. [19] 25: 276-282. ***Bau, A.**—Lipoptena surinamensis und Melophagus ovinus bolivianus, zwei neue Hippobosciden. [60] 91: 175-177. ***Collin, J. E.**—A revision of the Greenland species of the Anthomyid genus Limnophora sens. lat., with figures of the male genitalia of these and many other palaearctic species. [36] 78: 255-281, ill. ***Collin, J. E.**—The Oxford University Expedition to Greenland, 1928. Diptera (Orthorrhapha Brachycera and Cyclorrhapha) from Greenland. [75] 7: 67-91, ill. **Czerny, L.**—Die Musca annulata (Micropez.). (S). [Mitt. Deutschen Ent. Gesell.] 1: 117-121. ***Hoffmann, C. C.**—Los simulidos de la region Onchocercosa de Chiapas (Con descripcion de nuevas especies). (S). [An. Inst. Biol., Mexico] 1: 293-306, ill. **Jeffrey, E. C.**—Cytological evidence as to the status of Drosophila melanogaster. [90] 65: 19-30, ill. ***Kröber, O.**—Die südamerikanischen arten der gattung Scione (Rhinotriclista). [60] 91: 141-174, ill. ***Lindner, E.**—Revision der amerikanischen dipterenfamilie der Rhopalomeridae. (S). [11] 1930: 122-137, ill. ***Malloch, J. R.**—Notes on some Acalyptrate flies in the United States Na-

tional Museum. [50] 78, Art. 15: 32 pp., ill. (S). **Matheson, R.**—Distribution notes on Culicidae. [19] 25: 291-294. **Roubaud, M. E.**—Sur l'existence de races biologiques génétiquement distinctes chez le moustique commun Culex pipiens. [69] 191: 1386-1388. **Schwardt, H. H.**—Notes on the immature stages of Arkansas Tabanidae. [103] 4: 1-4. **Thorpe, W. H.**—The biology of the petroleum fly. [68] 73: 101-102. **Thorpe, W. H.**—The biology of the petroleum fly (Psilopa petrolii). [36] 78: 331-343, ill.

**COLEOPTERA.—Arangua, E. V.**—Contribuciones al estudio de los Cicindelidae. V. La Cicindela oregona en los estados del sur oeste. [44] 33: 394-402. ***Blaisdell, F. E.**—Revision of the Endomychid tribe Liesthini with a description of a new genus and a new species. [1] 56: 375-390, ill. ***Borchmann, F.**—Die gattung Lystronychus (Allecul.). (S). [11] 1930: 81-121, ill. **Bradley, J. C.**—The names of certain Rhynchophora. [19] 25: 259-262. **Eggers, H.**—Borkenkäfer (Ipidae) aus Südamerika. III [2] 26: 163-171, Cont. ***Fall, H. C.**—An interesting new genus and species of Cistelidae. [103] 4: 15-16. ***Fisher, W. S.**—A new longhorn beetle from Costa Rica (Cerambycidae). [91] 21: 23-24. **Grosmann, H.**—Beiträge zur kenntnis der lebensgemeinschaft zwischen borkenkäfern und pilzen. [Zeit. Parasit., Berlin] 3: 56-102, ill. ***Hustache, A.**—Curculionides de la Guadeloupe. [Faune Col. Franc.] 4: 148 pp., ill. **Jeannel, R.**—Monographie des Trechinae. Morphologie comparée et distribution géographique d'un groupe de coleopteres. (Liv. 4). [L'Abeille] 34: 59-122, ill. **Kleine, R.**—Bibliographie der brenthidenliteratur. [60] 91: 195-213. ***Ohaus, F.**—Eine neue Plusiotis aus Guatemala. [60] 91: 265-266, ill. ***Ohaus, F.**—Neue brasilianische Dynastinen. [60] 91: 261-265, ill. ***Ohaus, F.**—XXVI. Beiträge zur kenntnis der Rutelinen. (S). [11] 1930: 138-158, ill. **Park, O.**—Studies in the ecology of forest Coleoptera—II. The relation of certain Coleoptera to plants for food and shelter, especially those species associated with fungi in the Chicago area. [84] 12: 188-206, ill. ***Pic, M.**—Contribution a l'étude des coléoptères Malacodermes. II. Quelques données générales sur la systématique et cas particuliers. (S). [24] 99: 311-324. ***Pic, M.**—Malacodermes exotiques. (S). [Issued with L'Exchange Rev. Linné paged separately.] ***Pic, M.**—Coléoptères exotiques en partie nouveaux. (S). [L'Exchange Rev. Linné] 45: 7-8, 11-12, 16. **Schedl, K. E.**—Morphology of the bark-beetles of the genus Gnathotrichus. [Smiths. Misc. Coll.] 82: 88 pp., ill.

**HYMENOPTERA.—Bruch, C.**—Nidificación de "Sceliphron figulus" y observaciones biológicas sobre esta especie. [An. Soc. Cien. Argentina] 110: 367-386, ill. ***Creighton, W. S.**—The new world species of the genus Solenopsis (Formicidae). [Pro. American Acad. Arts & Sci.] 66: 39-151, ill. [New species from South America.] ***DeGant, F.**—Two new species of parasitic hymenoptera (Braconidae) from Ohio. [10] 32: 163-165. ***Gahan, A. B.**—Two new hymenopterous parasites of Tachypterellus consors. [91] 21: 37-39. ***Hoffmeyer, E. B.**—Notes on some North American Callimomidae (Chalc.). [102] 17: 213-218, ill. **Parks, H. B.**—Notes on Texas bees. [19] 25: 263-267.

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**SPECIAL NOTICES.—Opinions** 115-123 rendered by the International Commission on Zoological Nomenclature. [Smiths. Misc. Coll.] 73: 1-36. [Nothing directly entomological.]

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BRADLEY'S MANUAL OF THE GENERA OF BEETLES.

Dr. J. Chester Bradley, Professor of Entomology in Cornell University, has compiled for the use of his students a Manual of the Genera of Beetles of America, north of Mexico. It makes a volume of 360 pages which is offered to students of Coleoptera, other than those in the University, through the publishers, Daw, Illston & Co., of Ithaca, N. Y.

The work includes dichotomous keys for determining the families of Coleoptera known to occur in America, north of Mexico, pages 1 to 15, keys to the tribes and genera included in each family, pages 16 to 305, a taxonomic conspectus of the genera, pages 306 to 334, and an index. The keys are stated in the preface to have been selected, rearranged, abbreviated, combined and translated from "all the most recent sources, scattered through the world's literature on insects." In some cases alternative keys are given, as on pages 16 to 22, where the tribes of the Carabidae are defined according to Sloane and again according to Horn; and in a few instances the keys are original. Apparently no effort has been spared to make the work a complete compilation of our present knowledge of the classification of Coleoptera; it includes even Dr. Blatchley's discovery of the family Gnostidae (published in April, 1930), and presents a view of recently proposed changes in classification and nomenclature that will be useful to all.

In dealing with the changes proposed in the classification, Dr. Bradley has followed essentially that of the writer's catalogue; to provide ready reference thereto, the number of the catalogue page for each genus is entered in the List of Genera. Modifications in the sequence or rank adopted in the catalogue have been made only in cases where more recent work has made such a course necessary; in a few instances, proposed changes, characterized as premature or revolutionary, have been disregarded.

The matter thus prepared has been reproduced in pages resembling typewritten sheets, clearly and legibly printed, and reflecting credit upon the publisher as well as the author. In the difficulty now existing of procuring copies of the Leconte and Horn "Classification," or of Blatchley's "Beetles of Indiana," the need of such a manual is apparent; and it is gratifying to record that it has been prepared in a competent and conservative manner.

In the preparation of the keys, in which Dr. Bradley acknowledges the helpful criticism of Dr. W. T. M. Forbes, and in the correction of the manuscript, in which he was assisted by Mr. Kenneth Caster, errors, though not entirely absent, seem to have been practically eliminated. It should be noted, however, that on page 21, line 8, (35) is an error for (30). It is probable that in defining nearly 4000 categories, other errors may have escaped detection.

It may be of interest to add a few words as to the changes in families which Dr. Bradley has adopted. Nine families are added, usually on excellent authority; these are Pseudomorphidae, Leiodidae, Laridae, Ptilodactylidae, Psoidae, Silvanidae, Languriidae, Trogidae, and Calendridae. The argument in favor of such changes is the striking differences between the genera included and those with which they have formerly been included. On the other hand seven families are reduced in rank; these are Platypsyllidae, Leptinidae, Brathinidae, Corynetidae, Pedilidae, Plastoceridae and Elmidae. In consistency of treatment some of these reductions may not be ultimately adopted. The position assigned to Brathinus, as a genus of Omaliinae, seems to the writer especially inconsistent; but in this, as in the other changes mentioned, Dr. Bradley has followed the most recent author on the subject.

A few changes have been made in nomenclature, e.g., Elacatidae for Othniidae, Ciidae for Cisidae, Choragidae for Platystomidae; the last-named, according to Pierce '30, seems to be unnecessary.

The student of the Coleoptera will find in this Manual a

complete and comprehensive guide to the classification into families, tribes and genera, wisely planned and excellently executed. Dr. Bradley is to be congratulated on the highly successful completion of a monumental task, a volume in which, for the first time since 1883, every coleopterous genus of America, north of Mexico, is adequately defined.

C. W. LENG.

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THOMAS SAY, EARLY AMERICAN NATURALIST. By HARRY B. WEISS and GRACE M. ZIEGLER. A Foreword by L. O. HOWARD. MCMXXXI Charles C. Thomas, Publisher, Springfield, Illinois; Baltimore, Maryland. Pp. xiv, 260, 27 illustrations. $5.00 postpaid.—For the past few years Mr. Weiss has been giving us vivacious sketches of entomological celebrities of many lands. It is quite appropriate, therefore, that he should undertake this more pretentious life of one of the earliest and best known American workers in this field. He and Miss Ziegler have brought together all that was previously known of Say's life and added thereto much unpublished material from many sources. The publisher's jacket rightly describes the book as primarily concerned with Say's life rather than his scientific attainments, and Dr. Howard adds that, after reading the authors' account of a number of Say's contemporaries, "one feels almost as though he himself had lived at that time and knew these things as one knows contemporary things."

Three generations of Says preceded Thomas Say, the entomologist, in Philadelphia. There was William Say, his great-grandfather, who is supposed to have come over with William Penn, who in 1699 married Mary Paschall, daughter of two others supposedly of Penn's company. William Say died in 1714. His son Thomas (1709-1796), saddler and harness-maker, later apothecary and "physician", city commissioner and coroner, was famous for "the Uncommon Visions" which he had when a young man. Benjamin Say (1756-1813) is "supposed to have graduated as a physician from the University of Pennsylvania in 1780, although present available alumni records do not substantiate this". Nevertheless he practised medicine, charged fees therefor, and signed the original Constitution of the College of Physicians of Philadelphia as a Junior Fellow, January 2, 1787 (the year of its foundation), and subsequently served as its treasurer for eighteen years.

Benjamin Say married Ann Bonsall, granddaughter of John Bartram, the botanist, on October 1, 1776. Their oldest child, Mary (Polly), appeared November 17, 1778; the second,

Thomas, the subject of this book, was not born until June 27, 1787. One naturally looks to his mother's ancestry as accountable for his interest in natural history and we are told that, as a boy, when he collected beetles and butterflies, "he was encouraged by William Bartram, of Kingsessing, his great-uncle, who induced him and several of his young companions to contribute their findings to his collection of natural history specimens."

Thomas Say's brief partnership with John Speakman in the drug business, their financial failure, doubtless soon forgotten in his absorption in the newly founded (1812) Academy of Natural Sciences of Philadelphia are matters well-known. Less familiar, perhaps, is his service as a member of the Philadelphia First City Troop from September 5 to December 20, 1814, in the war with England, although his duties were, apparently, not outside the state of Pennsylvania.

Say's knowledge of the world was chiefly obtained in the four expeditions to Florida (1817-1818), the Rocky Mountains (1819-1820), St. Peter's River and Lake Winnipeg (1823) and Mexico (1828), to accounts of which some forty-seven pages are devoted. The first and fourth were private journeys with William Maclure, President of the Philadelphia Academy 1817-1840, man of means and friend of Say. The second and third were performed under the orders of the Secretary of War, John C. Calhoun, and the command of Major Stephen H. Long, of the United States Topographical Engineers. Say was Zoologist on both expeditions, but gathered data not only on animals but also on the vocabularies of Indian tribes.

It was between the third and fourth of these journeys, or in 1825, that Say left Philadelphia with Maclure for New Harmony, Indiana, to participate in Robert Owen's communistic experiment. At New Harmony, on January 4, 1827, he married Lucy Way Sistare, of New York City, who had come out with the same party; there he became agent for Maclure after Owen's withdrawal and there he died October 10, 1834.

Entomologists will be interested in Say's fourteen letters to John F. Melsheimer, from April 12, 1816, to December 1, 1824, many of them first published in the NEWS for 1901 and 1902. Say, indeed, has sometimes been called "The Father of American Entomology", but he himself applied the term "parent of Entomology in this country" in his *American Entomology*, to Frederick Valentine Melsheimer, author of the *Catalogue of Insects of Pennsylvania* of 1806,* and father of John F. Melsheimer. In a letter of November 6, 1817, he tells the latter:

* Compare ENTOMOLOGICAL NEWS, xli, p. 196, June, 1930.

"I assure you that Shells and Crustacea are but secondary things with me, INSECTS are the great objects of my attention. I hope to be able to renounce everything else & attend to them only." Either by choice or by necessity this hope itself was renounced, for it was in his closing years at New Harmony that his *American Conchology* was written and published, although never completed. Say had his troubles with Dermestids in his collection as appears from three different references in this book (pages 54, 145, 154), with non-receipt of separata of his papers (page 59), with the non-publication of another (page 148).

Say was nominally "Professor of Natural History including Geology" at the University of Pennsylvania, in Philadelphia, from 1822 to 1828. Our authors have not shed any further light on this part of his career than is already contained in Francis Newton Thorpe's *Benjamin Franklin and the University of Pennsylvania*,† for example. It is not known whether Say ever gave any instruction under this appointment or not, although he placed his professorial title under his name on the title pages of his *American Entomology*. The last three years of his tenure were certainly spent away from Philadelphia.

The biography of Say and of his ancestors occupies the first nine chapters, or 158 pages of the book. Then follow brief accounts of some of his friends: his brother Benjamin (1790-1836), William Maclure (1763-1840), Titian Ramsey Peale (1800-1885), J. F. Melsheimer, Thaddeus William Harris (1795-1856), Nicholas Marcellus Hentz (1797-1856) and others whose interests lay along non-entomological lines. Some of his European correspondents are enumerated in chapter XII. A summary of his published writings forms chapter XIII. Chapter XIV describes the period in which Say worked, Chapter XV the fate of his collections. Mrs. Say survived until November 15, 1886, dying in Lexington, Massachusetts, at the age of 86; chapter XVI bears her name. Chapter XVII describes the Say Burial Grounds in Philadelphia and at New Harmony; it is in the latter that the remains of Thomas Say repose. The eighteenth chapter gives the location of Say's manuscripts and letters, which the authors have so diligently explored. Chapter XIX discusses the portraits of Thomas Say, three of which are reproduced here. The Postface mentions "the numerous persons whose combined help made this life of Thomas Say possible and whose unfailing courtesy was a constant source of pleasure." There are also nine pages of genea-

† Bureau of Education Circular of Information No. 2, 1892. Washington: Government Printing Office, 1893. See pages 330-331 in the article on "The Biological School," by Joseph T. Rothrock.

logical records of the Say family and a bibliography, occupying ten pages, of general works, articles on the Say family, on Thomas Say and on his contemporaries, but no list of Say's writings is included, probably for reasons which are hinted at in chapter XIII. The volume concludes with an index. The illustrations, in addition to the three portraits mentioned above, comprise portraits of Robert Owen, Maclure, Charles Alexander Lesueur, John Speakman, Jr., and Mrs. Say, views in old Philadelphia and in New Harmony, and fac-similes of title-pages of books and of letters of Thomas Say.

Weiss and Ziegler's *Thomas Say* thus gives us a fuller account of this early American naturalist than we have ever before possessed, told in a pleasing way, and enabling us to understand more clearly the beginnings of natural science in the United States. Like all of Mr. Thomas' publications, the book is finely manufactured. P. P. CALVERT.

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THE AFRICAN REPUBLIC OF LIBERIA AND THE BELGIAN CONGO. Based on the Observations made and the Material collected during the Harvard African Expedition 1926-1927. Edited by RICHARD P. STRONG. Cambridge, Harvard University Press 1930. 4 to., 2 vols., paged consecutively: Vol I, pp. xxvi, 1-568, 7 maps, 443 + 2 figs.; Vol. II, pp. ix, 569-1064, 2 maps, 33 + 28 figs. $15.00.—The contents of these finely printed and illustrated volumes are divided into three parts: 1. A detailed and interesting account of the geography, climate, inhabitants and their peculiarities, sanitary and medical conditions, geology, flora, mammals, birds, reptiles, amphibians and insects of Liberia, by Dr. Strong (209 pages). 2. Medical and pathological investigations in Liberia and the Belgian Congo by Drs. Strong and George B. Shattuck (252 pages). 3. Medical and Biological Investigations. Eighteen articles, by various authors, on helminths, protozoa, plants, mammals, birds, reptiles, amphibians, certain groups of insects and photography (591 pages). The attention now being directed to slavery and prevalence of human diseases in Liberia, instigated in part by this expedition, renders the presentation of these conditions very timely.

Among the entomological contents of this report is the summary on entomology (pp. 189-197) in Part 1 and an extensive article (205 pages) on Medical and Economic Entomology by Dr. Joseph Bequaert, entomologist of the expedition, treating of Arachnids, Isoptera, Heteroptera, Dermaptera, Orthoptera, Diptera, Anoplura, Mallophaga, Siphonaptera and Coleoptera, which is supplemented by another on Hemiptera, Mallophaga

and Anoplura, by G. F. Ferris. Of all the groups dealt with by Dr. Bequaert, the Tabanidae receive the greatest attention (113 pages), at least one new subgeneric name and a number of new species being proposed, while keys to the Ethiopian genera and to the species inhabiting the Belgian Congo of several genera are given as well as a tentative grouping of the family embodying his views of the natural relationships between the several genera. Three main divisions, or subfamilies, are recognized under the names of Coenomyiinae, Pangoniinae and Tabaninae, the distinctions between them being chiefly in the presence or absence of ocelli and of spurs on the hind tibiae, and the straight or wavy course of the sixth longitudinal vein (*An*). Under the Mosquitoes it is remarked that: "In Liberia the mosquitoes most troublesome and dangerous to man are a few domestic or urban species, whose breeding places are almost entirely the result of human activities. In the primary rain forest, second-growth, swampy forest, or mangrove, away from the towns, one is but little annoyed by these insects. In the towns, however, one is bitten mostly by *Aedes egypti, Culex quinquefasciatus, Anopheles gambiae* and *A. funestus,* all of which are important carriers of human diseases. At Monrovia, I found that even these mosquitoes were not particularly numerous nor annoying during July and November; at any rate they were much less abundant than in many other tropical places I have visited. Dr. A. W. Sellards had a similar experience in March, so that apparently much the same conditions prevail throughout the year. An investigation of the town and its immediate surroundings disclosed relatively few breeding places, although no attempt had ever been made at controlling or eliminating them. Some of these breeding places, such as open ditches of stagnant water or empty cans nears houses, could easily be dealt with. The most difficult to control, however, will be the large open wells, surrounded by vertical stone walls, that are found in almost every yard throughout the town. At Monrovia both anophelines and *Aedes egypti* were breeding in them. . . . Perhaps the proper solution of the problem might be to stock the wells with certain small fishes that feed upon mosquito larvae."

Prof. Ferris describes and figures both new and previously known species of *Trichodectes.* Briefer articles are those by C. T. Brues on *Aneurobracon,* a remarkable new genus of Braconidae from Liberia, by C. P. Alexander on Tipulidae collected by the Expedition (some new species), and by P. P. Calvert on the Odonata, and N. Banks on Neuroptera, Mecoptera and Trichoptera, from the same source.

P. P. CALVERT.

## OBITUARY.

JAMES H. EMERTON died in Boston, Massachusetts, on December 5, 1930. He was widely known as a student of spiders, an illustrator of scientific books and a constructor of zoological and anatomical models. He was born in Salem, Massachusetts, in 1847. He published a series of papers on New England and Canadian spiders in the *Transactions of the Connecticut Academy of Arts and Sciences* (New Haven), from 1882 to 1894. These led to frequent calls upon him "for a smaller and simpler book to meet the wants of readers who, without making a special study of the subject" wanted "to know a little about spiders in general and especially those species that they often met with." The result was his book of 243 pages and 501 figures entitled *The Common Spiders of the United States* (Boston & London, Ginn & Co., 1902). He also wrote *The Structure and Habits of Spiders* (1878) and *The New England Spiders.* He made many illustrations for Packard's *Guide to the Study of Insects,* Scudder's *Butterflies of New England,* and non-entomological works of A. E. Verrill and C. S. Minot. We are informed that an extensive obituary notice with a list of his papers will appear in *Psyche.* P. P. CALVERT.

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The death of Professor JURIUS PHILIPTSCHENKO on May 19, 1930, at Leningrad, of meningitis, is announced in a note, signed by M. Rimsky-Korsakow, V. Dogiel, M. Rozanova, T. Lus and T. Liepin, published in *Science* for January 23, 1931. We quote from it as follows: "He was born on February 1, 1882, in the family of an agriculturist-scientist residing in the province of Orel. After graduating in the University of Petersburg, in 1906, he continued studying for his professorship at the Zoological Cabinet at the University. In 1912 he presented his dissertation on the embryology of Apterygota, and the degree of Master of Zoology was conferred on him for it. In 1917 [he] obtained his doctorate on presenting another dissertation on the variability and heredity of the skull in mammals. In the meanwhile, he was elected first assistant professor, then reader

in Zoology, and in 1919 professor of the University of Petersburg, where he established the first chair of genetics in Russia and founded a new school of young geneticists. . . . Some months before his demise [he] was placed at the head of the department of genetics of the Institute of Animal Industry of the Lenin Academy of Agricultural Sciences in U. S. S. R. His works, nine of which represent large manuals of genetics and experimental zoology, amount to 114 in number . . . As to his personality, it should be mentioned that he was not only an eminent scientific investigator and a brilliant lecturer, but also an exceptional man, well known for his inexhaustible energy, kindness and responsiveness to the needs of all those who surrounded him. His death was a heavy blow to every one who knew him closely and a great loss for science."

Philiptschenko's papers on the Apterygota, insofar as they were not published in Russian, appeared chiefly in the *Zeitschrift für wissenchaftliche Zoologie* and comprise his *Anatomische Studien über Collembola* (vol. 85, 1906), *Über die excretorischen und phagocytären Organe von Ctenolepisma lineata* (vol. 88, 1907), *Über die Kopfdrüsen der Thysanuren* (vol 91, 1908) and *Die Embryonalentwicklung von Isotoma cinerea Nic.* (vol. 103, 1912). A summary of the last named is given by its author in the *Zoologischer Anzeiger* (vol. 39) for the same year.

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Professor JAMES S. HINE, of the Ohio State University, known for his work on Tabanidae, Asilidae and on Odonata, died suddenly on December 22, 1930.

The sudden and unexpected death, on January 30, 1931, of Dr. FRITZ RIS, at Rheinau, Switzerland, after a brief indisposition, is announced. His publications on neuropteroid insects, especially in later years the Odonata, and including a great monograph of the Libellulinae of the world, have given him high rank as an entomologist.

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We hope to present longer notices of both these naturalists in later numbers of the NEWS.

# EXCHANGES

**This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.**

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**These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.**

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**Wanted**—Names and addresses of collectors of insects, particularly Lepidoptera. Those from foreign countries especially invited. Will pay cash or exchange. Peter M. Casamento, P. O. Box 276, West New York, New Jersey.

**Exchange**—All groups of Lepidoptera in exchange for Noctuidae of the World. Foreign correspondence desired. A. Glenn Richards, Jr., Roberts Hall, Cornell Univ., Ithaca, N. Y., U. S. A.

**Exchange**—Lepidoptera of the Northwest for beautiful and showy exotics. C. W. Herr, Priest River, Idaho.

**WANTED** for cash or in exchange, hibernating pupae, especially Papilios, Saturniidae, Eacles imperialis, Autom. io and others from all parts of the States, Canada and Mexico. Send lists with best prices to Max Rothke, 1846 East Elm St., Scranton, Pa.

**Mordellidae** from all parts of the world wanted for special study. Will determine, exchange or purchase. Emil Liljeblad, 1018 Roscoe St., Chicago, Illinois.

**Exchange**—Will exchange California Butterflies for any of your locality. What have you to offer? Correspondence solicited. John Imschweiler, 748 N. Eucalyptus Ave., Inglewood, California.

**Exchange**—Oregon Lepidoptera for those of your locality. Kenneth M. Fender, 930 South Davis St., McMinnville, Oregon.

**Exchange**—Will exchange Montana Lepidoptera and Coleoptera for material of your locality. Correspondence solicited from all parts of the world. W. F. Lawrence, 2209 6th Ave. No., Great Falls, Montana.

**Exchange**—South American, also Java, Borneo, Celebes and Madagascar Butterflies in lots by 12.50 or 100 monthly arrivals. Wish for revisional study all North American PARNASSIUS and ARCTIIDAE also APANTESIS. Communicate with Mrs. Emma Kessler, 499 Manhattan Ave., New York City, N. Y.

**Wanted.**—Elateridae and their larvae (wireworms) from all parts of North America; would prefer the larvae alive, if possible, for biological studies. Will exchange Pennsylvania Elateridae and Scarabaeidae.—C. A. Thomas, Penna. State College Lab., Kennett Square, Pa.

**Insects of all Orders** from Laurentian Mountains, Province of Quebec, in exchange for named species lacking in our collection. Albert F. Winn, Redpath Museum, McGill University, Montreal Canada.

**WANTED TO BUY** or in exchange for Chinese insects. Proc. Ent. Soc. Philadelphia Vols. I-VI, Trans. Am. Ent. Soc. Vols. I-IV, Bull. Brooklyn Ent. Soc. Vols. I-V, Trans. Ent. Soc. London, 1st ser. Vols. I-V and Psyche Vols. I, XI, and XIII. G. P. Jung, Bureau of Entomology, Nanking, China.

**Wanted for Hybridization**—Living cocoons of Saturniidae excepting S. cecropia and A. io. Dept. of Zoology, University of Pittsburgh, Pittsburgh, Pa.

**Exchange**—Butterflies, Noctuides, Geometrides from northern Italy and the Alps (7000 feet), several kinds of Sphingid-hybrids for better U. S. A. Heterocera, specially representatives of the smaller families, Noctuides and Geometrides; further details on request. H. Bytinski-Salz, Dept. of Zoology, Yale University, New Haven, Conn.

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